REMARKS

This amendment is in response to the Office Action dated September December 23, 2008 in which claims 1-17 were initially rejected. Reconsideration and allowance of all pending claims in view of the above-amendments and the following remarks are respectfully requested.

I. OBJECTIONS TO THE ABSTRACT

The Abstract was objected to as including the form and legal phraseology often used in patent claims, such as "said" in lines 5, 7, 10 and 11.

A replacement Abstract is filed herewith in which the terms "said", "comprising", and "invention" are eliminated. Also, minor formatting and grammatical changes are made in an effort to divide the Abstract into several sentences.

II. OBJECTIONS TO THE SPECIFICATION

The disclosure was objected to because the following informalities: page 4, line 12, Figure [2] should be "Figure 3."

The specification is amended accordingly.

III. OBJECTIONS TO THE DRAWINGS

The drawings were objected to for containing minor informalities.

Accordingly, please find enclosed replacement sheets (sheets 1 and 2) in which the following amendments are made to fulfill the Examiner's requirements:

-    figures 1 to 3 have been designated by a legend "Prior art";

-    in figure 2, the block pertaining element (22) has been designated by the descriptive label "Binary Code".

IV. CLAIM OBJECTIONS

Claims 2-17 are objected to because of several informalities.

With this amendment, claims 1-17 are cancelled, and claims 18-50 are added as new

claims. Claims 18-34 generally correspond to amended versions of cancelled claims 1-17, respectively.

Claims 19-34 (similar to cancelled claims 2-17) are amended as suggested in the Office Action.

A.   **Additional Amendments**

New 18 (as compared to cancelled claim 1) is amended to state that the reception method comprises:

a step to determine the noise robustness of the coding levels, the noise robustness of a coding level being inversely proportional to the error rate of this coding level;

a step to determine a decoding order as a function of the robustness of the coding levels.

The amendments are based on the specification in English, on page 12, line 13 to line 22 page 13.

The other independent claims have been amended in a similar way.

New dependent claims 35 and 36 are directed to protecting different embodiments of determining the decoding order:

-     according to a 1st embodiment, each coding level is decoded independently to determine the noise robustness of each coding level (page 12, lines 17-22). For example, according to figure 4, the decreasing order of the robustness of the coding levels is MSB-LSB-ISB (page 13, lines 3-10) ;

-     according to a 2nd embodiment, each coding level is decoded independently to determine the most robust level. Then, the other coding levels are decoded, taking account of the most robust level. For example, according to figure 4, the decreasing order of the robustness of the coding levels is MSB-ISB-LSB (page 13, lines 11-14).

New claims 37-50 are directed to protecting "decoding device claims" in a similar manner as the "decoding method claims".

V.   CLAIM REJECTIONS UNDER §112

Claims 1-17 were rejected under 35 U.S.C. 112, second paragraph, as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A.   **Claim 1 – Method Steps**

So as to conform U.S. practice, claim 1 is amended in order to show clearly the different steps and to recite the steps more positively and actively.

B.   **Antecedent Basis**

In addition, the claims are amended to provide better antecedent basis for certain terms, such as the ones referred to in the Office Action on page 5.

C.   **Definiteness**

Claims 1 and 14-17 were indicated as being allegedly vague and indefinite, in particular with respect to performing certain steps.

The amended set of claims further defines how the "noise robustness" is determined.

1.   Meaning of the word "robustness"

The applicant would like to point out that the "robustness" according to the present claims does not have the same meaning than the "significance" (or "weight") of the bits, or the "reliability" associated to the decoding.

The distinction between the meaning of "robustness" and "significance" is explained though the specification. For example, according to page 6, line 21 to page 7, line 11: according to one embodiment of the invention (which is only an embodiment, not the general case), the bits assigned to the most robust level are the most significant bits of the corresponding symbol. As a consequence, "robustness" does not mean "significance" of the bits, since it is only according to a particular embodiment that the most significant bits are the bits assigned to the most robust level. See also page 14, line 25: "It will therefore easily be understood that the most robust level is not

necessarily the level of the most significant bits".

A definition of the robustness according to the present application can be found in the specification, page 12, line 13, to page 13, line 22.

For example, as written on page 12, lines 15-18, "the robustness of a coding level may be illustrated by the curve of the binary error rate of this level, and the function of the signal-to-noise (S/N) ratio" and "a coding level shall be considered to be all the more robust as the binary error rate associated with it is low". As written on page 14, lines 20-21, "the noise robustness of a coding level is inversely proportional to the error rate of this level".

For example, most significant bits (with a high weight) can be assigned to a coding level with a high binary error rate, corresponding to a coding level that is not very robust. As a consequence, **the bits assigned to this coding level are most significant, but not robust**.

On the other hand, least significant bits (with a low weight) can be assigned to a coding level with a low binary error rate, i.e. a coding level that is very robust. As a consequence, **the bits assigned to this coding level are least significant, but very robust**.

For example, the robustness of each coding level relative to a Gaussian additive white noise can be determined by decoding each coding level independently, i.e. without making any return loop from one level to another (page 12, lines 19-20).

As a consequence, the words "robustness" according to the present application and "significance" (or "weight") have different meanings. The "robustness" of a coding level reflects a "resistance" of the coding level relative to the noise, whereas the "significance" of a bit reflects the importance of the information conveyed by the bit.

The meaning of this term now appears clearly in claim 1, defining the robustness to noise as being inversely proportional to the error rate of the coding level.

D.   **Claim 17**

The Examiner indicated the method steps recited in claim 17 lack any apparatus and devices related to the different fields recited in the preamble.

Claim 17 is re-ordered to more positively recite the different fields within a step in the

method.

VI.   CLAIM REJECTIONS UNDER §101

Claims 1-14 and 17 were rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention.

Accordingly, claim 18 (corresponding to cancelled claim 1) is amended to include the step of :

"- performing at least two successive decoding iterations with a decoder."

Independent claim 17 is amended in a similar manner. Thus, these claims are now directed to statutory subject matter since they are positively tied to another statutory category (i.e., a "decoder").

VII.   ALLOWABLE SUBJECT MATTER

The Office Action indicated that claims 15 and 16 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph.

In addition, Applicants consider that the new claims are patentable over the references cited by the Examiner in the Conclusion section of the Office Action. Indeed, we note that the Examiner did not reject any of the existing claims based on the cited references.

In particular none of these references disclose the following steps:

- o determining the noise robustness of the coding levels, the noise robustness of a coding level being inversely proportional to the error rate of this coding level;

- o determining a decoding order as a function of the robustness of the coding levels;

- o decoding the bits according to the decoding order.

In other words, these documents do not disclose or suggest, taking account of the noise robustness of the different coding levels of a signal modulated according to a multi-level coding MLC technique, to determine the order of decoding of the received bits.

The claimed invention is thus new and non-obvious in view of the documents cited in reference by the Examiner.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

WESTMAN, CHAMPLIN & KELLY, P.A.

By: __/David D. Brush/_____
　David D. Brush, Reg. No. 34,557
　900 Second Avenue South, Suite 1400
　Minneapolis, Minnesota 55402-3319
　Phone: (612) 334-3222 Fax: (612) 334-3312